

AUG 16 2007

Appl. No. 10/826,733
Reply to Office Action of May 16, 2007

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An optical recording system including a recording / reproducing optical head having an objective lens, and an optical recording medium recorded and reproduced with irradiation of light thereon from said optical head, said irradiation of light being made by an the objective lens of which numerical aperture is larger than 1 to record and reproduce recorded pits, said optical recording medium comprising at least a silicon oxide layer and a silicon oxide layer being formed from the light irradiation side, over a substrate in that order,

wherein said silicon layer has formed thereon a protective layer of which refractive index is larger than a numerical aperture of said objective lens.

2. (Currently Amended) ~~An~~ The optical recording medium system according to claim 1, wherein said recorded pits are recorded by changing said silicon layer into silicon oxide.

3. - 4. (Cancelled)

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5. (Currently Amended) An optical recording and reproducing method for recording and reproducing data from an optical recording medium with irradiation of light from an objective lens contained in an optical recording / reproducing head, said light being irradiated through ~~an~~ the objective lens of which having a numerical aperture is larger than 1 and using said optical recording medium in which recorded pits are recorded and reproduced, wherein said optical recording medium has at least ~~a protective layer, a silicon layer and a silicon oxide layer, a silicon layer, and a protective layer~~ formed thereon from the light irradiation side over a substrate, in that order, said recorded pits being formed by changing said silicon layer into silicon oxide, and

a refractive index of the protective layer is larger than a numerical aperture of said objective lens.

6. (Currently Amended) ~~An~~ The optical medium recording system according to claim 1, wherein said protective layer is made of a material selected from the group consisting of ~~HfO₂, ZrO₂, Ta₂O₅, aluminum nitride, HfO₂, ZrO₂, boron nitride and diamond.~~

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7. (Currently Amended) ~~An~~ The optical recording and reproducing method according to claim 5, wherein said protective layer is made of a material selected from the group consisting of ~~HfO₂, ZrO₂, Ta₂O₅, aluminum nitride, HfO₂, ZrO₂~~, boron nitride and diamond.

Please add the following new claims:

8. (New) The optical recording system according to claim 1, wherein both said silicon layer and said protective layer have a refractive index larger than a numerical aperture of said objective lens.

9. (New) The optical recording and reproducing method according to claim 5, wherein both said silicon layer and said protective layer have a refractive index larger than a numerical aperture of said objective lens.

10. (New) The optical recording system according to claim 1, wherein said protective layer is made of a material selected from the group consisting of SrTiO₃, and diamond-like carbon.

11. (New) The optical recording and reproducing method according to claim 5, wherein said protective layer is made of a material selected from the group consisting of SrTiO₃, and diamond-like carbon.

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12. (New) The optical recording system according to claim 1, wherein the refractive index of the silicon recording layer is greater than or substantially equal to 3.

13. (New) The optical recording and reproducing method according to claim 5, wherein the refractive index of the silicon recording layer is greater than or substantially equal to 3.

14. (New) The optical recording system according to claim 12, wherein the refractive index of the silicon oxide layer is greater than or substantially equal to 1.5.

15. (New) The optical recording and reproducing method according to claim 13, wherein the refractive index of the silicon oxide layer is greater than or substantially equal to 1.5.

16. (New) The optical recording system according to claim 1, wherein said objective lens includes a solid immersion lens (SIL) shaped like a conical surface.

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17. (New) The optical recording and reproducing method according to claim 5, wherein said objective lens includes a solid immersion lens (SIL) shaped like a conical surface.

18. (New) The optical recording system according to claim 1, wherein said objective lens includes a solid immersion lens (SIL) having a main component material selected from the group consisting of ZrO_2 , SrTiO_3 , $\text{Bi}_4\text{Ge}_2\text{O}_{12}$, and $\text{Bi}_4\text{Ge}_3\text{O}_{12}$.

19. (New) The optical recording and reproducing method according to claim 5, wherein said objective lens includes a solid immersion lens (SIL) having a main component material selected from the group consisting of ZrO_2 , SrTiO_3 , $\text{Bi}_4\text{Ge}_2\text{O}_{12}$, and $\text{Bi}_4\text{Ge}_3\text{O}_{12}$.